

Injection System VMU plus

Installation parameter in concrete					
Diameter threaded Stud		M8	M10	M12	M16
Drill hole diameter d_0	[mm]	10	12	14	18
Clearance hole in the fixture d_f	[mm]	9	12	14	18
Range of drill hole depth for $h_{ef,min} - h_{ef,max}$	[mm]	60 - 160	60 - 200	70 - 240	80 - 320
Installation torque $< T_{inst}$	[Nm]	10	20	40	80
Spacing and edge distance					
Min. thickness of concrete slab for $h_{ef,min} - h_{ef,max}$	[mm]	100-190	100-230	100-270	116-356
Minimum spacing s_{min}	[mm]	40	50	60	80
Minimum edge distance c_{min}	[mm]	40	50	60	80

Extract from Permissible Service Conditions of ETA-15/0270

Approved loads for single anchor without influence of spacing and edge distance in dry or wet concrete.
 Approved loads for temperature range -40°C to +120°C please see approval ETA-15/0270.
 Total safety factor as per ETAG 001 included (γ_M and γ_F).

Loads and performance data							
Injection System VMU plus, threaded stud steel 5.8				M8	M10	M12	M16
Range of anchorage depths		$h_{ef,min} - h_{ef,max}$	[mm]	60 - 160	60 - 200	70 - 240	80 - 320
$h_{ef,max}$		cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. N.	[kN]	2,9-7,7	3,7-12,5	5,8-19,7
		50°C/80°C ¹⁾	C20/25 zul. N.	[kN]	1,8-4,8	2,6-8,7	4,2-14,4
$h_{ef,max}$		un-cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. N.	[kN]	7,2-8,7	9,0-13,8	11,7-20,1
		50°C/80°C ¹⁾	C20/25 zul. N.	[kN]	5,4-8,7	6,7-13,8	9,4-20,1
Approved loads, shear for $h_{ef,min} - h_{ef,max}$		cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. V.	[kN]	5,2	8,30	12
		50°C/80°C ¹⁾	C20/25 zul. V.	[kN]	3,6-5,2	6,3-8,3	10,1-12,0
Approved loads, shear for $h_{ef,min} - h_{ef,max}$		un-cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. V.	[kN]	5,2	8,3	12
		50°C/80°C ¹⁾	C20/25 zul. V.	[kN]	5,2	8,3	12
Injection System VMU plus, threaded stud steel 8.8				M8	M10	M12	M16
Range of anchorage depths		$h_{ef,min} - h_{ef,max}$	[mm]	60 - 160	60 - 200	70 - 240	80 - 320
$h_{ef,max}$		cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. N.	[kN]	-	-	5,8-19,7
		50°C/80°C ¹⁾	C20/25 zul. N.	[kN]	-	-	4,2-14,4
$h_{ef,max}$		un-cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. N.	[kN]	7,2-13,8	9,0-21,9	11,7-31,9
		50°C/80°C ¹⁾	C20/25 zul. N.	[kN]	5,4-13,8	6,7-21,9	9,4-31,9
Approved loads, shear for $h_{ef,min} - h_{ef,max}$		cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. V.	[kN]	-	-	13,8-19,4
		50°C/80°C ¹⁾	C20/25 zul. V.	[kN]	-	-	10,1-19,4
Approved loads, shear for $h_{ef,min} - h_{ef,max}$		un-cracked concrete					
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. V.	[kN]	8,6	13,1	19,4
		50°C/80°C ¹⁾	C20/25 zul. V.	[kN]	8,6	13,1	19,4

¹⁾ max. long term temperature / max. short term temperature

Higher concrete strength may lead to higher approved loads. Technical data for water-filled drill holes see approval.

Injection System VMU plus

Maximum tension load			≥ 80 M8	≥ 90 M10	≥ 110 M12	≥ 125 M16
	F 30 (30 min)	[kN]	1,64	2,6	3,35	6,25
	F 60 (60 min)	[kN]	1,12	1,77	2,59	4,82
	F 90 (90 min)	[kN]	0,59	0,94	1,82	3,4
	F 120 (120 min)	[kN]	0,33	0,52	1,44	2,69

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Approved loads for single anchor without influence of spacing and edge distance in dry or wet concrete.

Approved loads for temperature range -40°C to +120°C please see approval ETA-15/0270.

Total safety factor as per ETAG 001 included (γ_M and γ_F).

Loads and performance data								
Injection System VMU plus, threaded stud stainless steel A4, HCR				M8	M10	M12	M16	
Range of anchorage depths		$h_{ef,min} - h_{ef,max}$		[mm]	60 - 160	60 - 200	70 - 240	80 - 320
$h_{ef,max}$		cracked concrete						
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. N.	[kN]	2,9-7,7	3,7-12,5	5,8-19,7	8,8-35,1
		50°C/80°C ¹⁾	C20/25 zul. N.	[kN]	1,8-4,8	2,6-8,7	4,2-14,4	6,4-25,5
$h_{ef,max}$		un-cracked concrete						
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. N.	[kN]	7,2-9,8	9,0-15,5	11,7-22,6	14,3-42,1
		50°C/80°C ¹⁾	C20/25 zul. N.	[kN]	5,4-9,8	6,7-15,5	9,4-22,6	14,3-42,1
Approved loads, shear for $h_{ef,min} - h_{ef,max}$		cracked concrete						
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. V.	[kN]	5,7-5,9	9,0-9,3	13,5	21,1-25,2
		50°C/80°C ¹⁾	C20/25 zul. V.	[kN]	3,6-5,9	6,3-9,3	10,1-13,5	15,3-25,2
Approved loads, shear for $h_{ef,min} - h_{ef,max}$		un-cracked concrete						
Range of temperature		24°C/40°C ¹⁾	C20/25 zul. V.	[kN]	5,9	9,3	13,5	25,2
		50°C/80°C ¹⁾	C20/25 zul. V.	[kN]	5,9	9,3	13,5	25,2

¹⁾ max. long term temperature / max. short term temperature

Higher concrete strength may lead to higher approved loads. Technical data for water-filled drill holes see approval.

Maximum tension load			≥ 80 M8	≥ 90 M10	≥ 110 M12	≥ 125 M16
	F 30 (30 min)	[kN]	1,64	2,6	3,35	6,25
	F 60 (60 min)	[kN]	1,12	1,77	2,59	4,82
	F 90 (90 min)	[kN]	0,59	0,94	1,82	3,4
	F 120 (120 min)	[kN]	0,33	0,52	1,44	2,69

